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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,859	06/24/2003	An-Kee Lim	1349.1194	7187

21171 7590 09/12/2005

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EXAMINER
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NOTE, JANIS L

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/601,859

Applicant(s)

LIM ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-16 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 11, 12, 15 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-8, 13, 14, 16, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/17/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. The examiner acknowledges the cancellation of claim 10, the amendments to claims 1, 4-6, 9, and 11-16, and the addition of claims 21-24, set forth in the amendment filed on Jun. 23, 2005. Claims 1-9, 11-16, and 21-24 are pending.

The examiner also acknowledges the filing of the substitute specification on Apr. 28, 2005, with applicants' statement that "[t]he substitute specification contains no new matter" at page 14, of the response filed on Apr. 28, 2005. The substitute specification has been entered.

2. The "Amendment to the claims" section filed on Apr. 28, 2005, did not comply with 37 CFR 1.121 for the reasons discussed in the "Notice of non-compliant amendment" mailed on May 23, 2005. Accordingly, the "Amendment to the claims" section filed on Apr. 28, 2005, has not been entered.

3. The examiner has deleted the references, Japanese Patent Nos. 10-20515 and 2000-75509, on the form PTO-1449 filed on May 17, 2005, because said references are already listed on the form PTO-892 mailed on Aug. 20, 2004.

The examiner has also deleted the reference "Office action issued Apr. 12, 2005 from the Japanese Patent Office . . ." listed on the form PTO-1449 filed on May 17, 2005, because it

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fails to comply with 37 CFR 1.98(a)(3). Applicants have not provided a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent or reference listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicants are advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

4. The objections to the specification set forth in the office action mailed on Jan. 31, 2005, paragraph 4, have been withdrawn in response to the replacement of paragraph [0060] and the addition of paragraphs [0061] and [0062] set forth in the amendment filed on Apr. 28, 2005.

The rejections of claims 5-7 and 16 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on

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Jan. 31, 2005, paragraph 6, have been withdrawn in response to the amendments to claims 5 and 16 set forth in the amendment filed on Jun. 23, 2005.

The rejections of claim 6 and 14 under 35 U.S.C. 112, first paragraph, set forth in the office action mailed on Jan. 31, 2005, paragraph 8, have been withdrawn in response to the amendments to claims 6 and 14 set forth in the amendment filed on Jun. 23, 2005.

The objections to claims 4, 10, 12, and 13 set forth in the office action mailed on Jan. 31, 2005, paragraphs 9 and 10, have been withdrawn in response to amendments to claims 4, 12, and 13, and the cancellation of claim 10 set forth in the amendment filed on Jun. 23, 2005.

The rejection of claims 9-12 and 16 under 35 U.S.C. 103(a) over US 2003/00228534 A1 (Zhu), as evidenced by applicants' admission in paragraph 0033 of the instant specification of the chemical identity of the material associated with the tradename MPCT 10 obtained from Mitshubishi [sic: Mitsubishi] Paper Mill Co., combined with the other cited references, set forth in the office action mailed on Jan. 31, 2005, paragraph 19, has been withdrawn in response to the amendment to claim 9 set forth in the amendment filed on Jun. 23, 2005. That amendment to claim 9 added the limitation that the solvent in the dispersion liquid

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comprising the charge generation material is 1,1,2-trichloroethane. Zhu exemplifies making a dispersion liquid comprising the charge generation material, a binder resin, and the solvent methyl ethyl ketone and mixing the dispersion liquid with a solution that comprises the hole transport, the electron transport material, a binder resin, and the solvent tetrahydrofuran. Zhu, paragraph 0067.

The rejection of claims 9, 10, 12, and 16 under 35 U.S.C. 103(a) over US 2004/0096761 A1 (Lin), as evidenced by the ACS File Registry Number RN 26201-32-1 and US 5,350,844 (Martin), combined with the other cited references, set forth in the office action mailed on Jan. 31, 2005, paragraph 22, has been withdrawn in response to the amendment to claim 9 as described supra. Lin exemplifies a method of making a dispersing liquid comprising the charge generation material, a binder resin, and the solvent toluene and mixing the dispersing liquid with a charge transfer solution that comprises the hole transport, the electron transport material, a binder resin, and the solvents tetrahydrofuran and monochlorobenzene. Lin teaches that the coating solvent may be a trichloroethylene, i.e.,  $\text{HC}(\text{Cl})=\text{CCl}_2$ .  
Page 5, paragraph 0045, line 17.

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5. The substitute specification filed on Apr. 28, 2005, is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The substitute specification replaced the term "enaminstylbene [sic] polymer" with the term "aminostylbene [sic] polymer" in paragraphs [0018], [0029], and [0033]. The term "aminostylbene [sic: amino stilbene] polymer" is broader than the term "enaminstylbene [sic: enamine stilbene] polymer" disclosed in the originally filed specification because it includes amino stilbene polymers that are not enamine stilbene polymers, such as polymers that comprise a stilbene moiety and a triarylamino moiety.

Applicants are required to cancel the new matter in the reply to this Office Action.

6. The disclosure is objected to because of the following informalities:

There are numerous misspellings throughout the specification. For the example, "phthalocyan" in

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paragraph [0025] and "aminostylbene" in paragraph [0018] in the substitute specification filed on Apr. 28, 2005.

Appropriate correction is required.

Applicants' arguments filed on Apr. 28, 2005, have been fully considered but they are not persuasive.

Applicants assert that the substitute specification filed on Apr. 28, 2005, corrects the misspellings.

However, for the reasons discussed above, the substitute specification did not correct all the misspellings present in the specification. Accordingly, the objection stands.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-8, 13, 14, 21, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 and claims dependent on claim 1 are indefinite in the phrase "dissolving . . . the charge transfer material



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comprising a positive hole transfer material, the electron transfer material . . . a" (emphasis added) for lack of antecedent basis in claim 1. Claim 1 does not previously recite the presence of an electron transfer material. Claim 1 at line 4 recites "a charge transfer material."

Claim 5 and claims dependent on claim 5 are indefinite in the phrase "[a] single-layered electrophotographic photoreceptor having a charge generation material prepared by a process of manufacturing a single-layered electrophotographic photoreceptor" (emphasis added) because it is not clear how a photoreceptor "has" a charge generation material. A charge generation material is not a property, but a material. Furthermore, it is not clear what is being manufactured, e.g., the single-layered photoreceptor or the charge generation material.

Claim 5 and claims dependent thereon are further indefinite in the phrase "the charge generating material is included in a dispersion liquid, the dispersion liquid including the charge transfer material . . . and polycarbonate as the second binder resin" for lack of unambiguous antecedent basis in claim 5. Claim 5 previously recites that the dissolved charge transfer material comprises the second binder resin and the charge transfer material, not the dispersion liquid. Claim 5 recites

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that the dispersion liquid comprises the charge generation material and the first binder resin. Thus, it is not clear what is the composition of the dispersion liquid.

Claim 6 is indefinite in the phrase "the polycarbonate is in a range of 10 wt% to 90 wt%" because it is not clear what is the basis of the weight percentage. Neither the claim nor the instant specification defines the basis of the weight percentage.

Claim 8 is indefinite in the phrase "the binder resin further includes polycarbonate" (emphasis added) for lack of unambiguous antecedent basis in claim 1, from which claim 8 depends. It is not clear to what the binder resin recited in claim 8 refers, e.g., the first binder resin or the second binder resin recited in instant claim 1.

Claim 13 and claims dependent thereon are indefinite in the phrase ""the charge generating material dispersed in the dispersion liquid . . . further includes 1,2,2-trichloroethane as a solvent and polycarbonate as the second binder resin" (emphasis added) for lack of unambiguous antecedent basis. Claim 13 previously recites that the dissolved charge transfer material comprises the second binder resin, not the dispersion liquid. Claim 13 previously recites that the dispersion liquid comprises the charge generation material and the first binder

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resin. Thus, it is not clear what is the composition of the dispersion liquid.

Claim 14 is indefinite in the phrase "the polycarbonate is in a range of 10 wt% to 90 wt%" because it is not clear what is the basis of the weight percentage. Neither the claim nor the instant specification defines the basis of the weight percentage.

Applicants' arguments filed on Apr. 28, 2005, with respect to the rejections of claims 6 and 14 have been fully considered but they are not persuasive.

Applicants assert that the weight percentage recited in instant claim 6 and 14 is based on the mass of the solution.

However, there is no evidence in the present record to support applicants' assertion. The originally filed specification in paragraph 20 merely recites that the polycarbonate is present in the dispersion liquid in an amount of 10 wt% to 90 wt%. The originally filed specification in paragraph 0020 and originally filed claims 6 and 14 were silent on what was the basis of the amount of 10 wt% to 90 wt%. There is no evidence in the present record showing that the weight percentage recited in claims 6 and 14 is based on the total weight of the dispersion liquid. The weight percentage could also be interpreted to be based on the total weight of solids in

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the dispersion liquid. Accordingly, the rejections of claims 6 and 14 stand.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 16 recites that the first binder resin further includes polycarbonate and is a mixture of polycarbonate and polyethylene terephthalate polymer in a ratio of 1:99 to 99:1.

The originally filed specification does not provide an adequate written description of the first binder resin. The originally filed specification at paragraphs [0015] and [0017] teaches that the binder resin in the single-layered

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photoreceptor "can be a mixture of polycarbonate and polyethylene terephthalate polymer in a ratio of 1:99 to 99:1." In other words, the originally filed specification discloses that the binder resin in the single photoreceptive layer can be the mixture recited in the instant claim. However, the originally filed specification does not disclose that the binder resin used to form the dispersion liquid, which comprises the charge generation material and a solvent, can be the mixture as recited in the instant claim. Applicants have not indicated where in the originally filed specification there is written support for the binder resin used to form the dispersion liquid to be the mixture recited in instant claim 16.

11. Claims 1, 22, and 24 are objected to because of the following informalities:

In claim 1, the word "the" in the recitation "and mixed with the dissolved the [sic] charge transfer material" is not proper idiomatic English.

In claims 22 and 24, the misspelling "metylene" in the term "dicyanometylene."

Appropriate correction is required.

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12. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicants are required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 2 recites the limitation "the charge transfer material comprises a positive hole transfer material and an electron transfer material." However, claim 1, from which claim 2 depends, already recites the presence of "a charge transfer material comprising a positive hole transfer material and the electron transfer material . . . . "

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. In the interest of compact prosecution, the examiner has interpreted the weight percentage recited in instant claim 6 to be based on the total solid content in the dispersion liquid comprising the charge generation material, the charge transfer material, the polyethylene terephthalate, the polycarbonate, and the solvent as recited in instant claim 5.

Rejections based on this interpretation are set forth infra.

15. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2004/0009419 A1 (Yokota), as evidenced by ACS File Registry RN 26201-32-1 and Japanese Patent 01-299874 (JP'874). See the USPTO translation of JP'874.

Yokota discloses a single-layered photoreceptor comprising an aluminum drum having thereon a photoconductive layer comprising  $\gamma$ -titanyl phthalocyanine, a hole transport material, an electron transport material, and the polyester resin associated with the trademark O-PET obtained from "KANEBO." Example 1 in paragraphs 0051 and 0052. The polyester resin associated with the trademark O-PET is represented by Yokota's formula 6. See paragraphs 0037 and 0038. The polyester resin disclosed by Yokota meets the polyester resin composition recited in the instant claims.

Yokota does not disclose that the  $\gamma$ -titanyl phthalocyanine has at least 2 main peaks at Bragg angles in the range of  $9.5^\circ$  to  $27.3^\circ$  as recited in the instant claims. However, as evidenced by the ACS File Registry Number RN 26201-32-01, it is well known in the art that the titanyl phthalocyanine (TiOPc) has the chemical structure as recited in the instant claims. It is also well known in the art that  $\gamma$ -titanyl phthalocyanine provides an  $\text{CuK}\alpha$

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X-ray diffraction pattern having peaks at the Bragg angles  $2\theta \pm 0.2^\circ$  of  $17.7^\circ$ ,  $24.0^\circ$ , and  $27.2^\circ$ , which are within the range recited in the instant claims. See the translation of JP'874, page 8, line 23, to page 9, line 2; page 22, line 23, to page 23, line 6; and Fig. 1. Thus, it is reasonable to conclude that the Yokota  $\gamma$ -titanyl phthalocyanine meets the titanyl phthalocyanine limitations recited in instant claims 1 and 2. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Instant claims 1 and 2 are written in product-by-process format. Yokota does not exemplify forming the photoconductive layer as recited in the instant claims. Yokota discloses forming a dispersion by dispersing its  $\gamma$ -titanyl-phthalocyanine, the hole transport material, the electron transport material, and the polyester resin associated with the trademark O-PET in chloroform. Yokota, example 1. However, as discussed supra, the single-layered photoreceptor disclosed by Yokota, as evidenced by the other cited references, meets the compositional limitations recited in the instant claims. Accordingly, the photoreceptor disclosed by Yokota appears to be the same or substantially the same as the photoreceptor made by the method recited in the instant claims. The burden is on applicants to



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prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983);  
In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

16. Claims 1, 2, and 5-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Japanese Patent 10-020515 (JP'515), as evidenced by the ACS File Registry Number RN 26201-32-1 and Japanese Patent 61-271050 (JP'050). See the THOMSON machine-assisted English language translation of JP'515 and the USPTO translation of JP'050 for cites.

JP'515 discloses a single-layered photoreceptor comprising an aluminum drum having thereon a photoconductive layer comprising alpha titanylphthalocyanine, a hole transport material, an electron transport material, a polycarbonate resin, and the polyester resin associated with the trademark O-PET obtained from Kanebo, Ltd. See the THOMAS translation of JP'515, paragraphs 0046-0055, and example 3 in paragraphs 0059-0061. The polyester resin associated with the trademark O-PET is a copolymer comprising the units represented by JP'515 formula 11 and ethylene terephthalate. The polyester resin disclosed by JP'515 meets the polyester resin composition recited in the instant claims. The polycarbonate and polyester resins are each present in an amount of 7 parts by weight.

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Thus, the weight ratio of the polycarbonate to the polyester is 1:1, which is within the range of 1:99 to 99:1 recited in instant claim 8.

JP'515 does not disclose that the alpha titanyl phthalocyanine has at least 2 main peaks at Bragg angles in the range of  $9.5^{\circ}$  to  $27.3^{\circ}$  as recited in the instant claims. However, as evidenced by the ACS File Registry Number RN 26201-32-1 and the USPTO translation of JP'050, page 6, it is well known in the art that titanyl phthalocyanine (TiOPc) has the chemical structure as recited in the instant claims. It is also well known in the art that alpha titanyl phthalocyanine provides an  $\text{CuK}\alpha$  X-ray diffraction pattern having peaks at the Bragg angles  $2\theta \pm 0.2^{\circ}$  of  $12.3^{\circ}$ ,  $16.3^{\circ}$ , and  $23.3^{\circ}$ , which are within the range recited in the instant claims. See the USPTO translation of JP'050, page 6, line 17, to page 7, line 2; page 7, lines 12-14; and Fig. 1. Thus, it is reasonable to conclude that the JP'515 alpha titanyl phthalocyanine meets the titanyl phthalocyanine limitations recited in instant claims 1 and 5. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Instant claims 1, 2, and 5-8 are written in product-by-process format. JP'515 does not exemplify forming the photoconductive layer as recited in the instant claims. JP'515

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discloses forming a dispersion by dispersing its alpha titanyl-phthalocyanine, the hole transport material, the electron transport material, the polyester resin, and the polycarbonate in chloroform, where the polycarbonate is present in an amount of 26.6 wt% based on the solid content in the dispersion. The amount of 26.6 wt% is within the range of 10 to 90 wt% recited in instant claim 6. The amount of 26.6 wt% is determined from the information provided in example 3 of JP'515. Furthermore, as discussed supra, the single-layered photoreceptor disclosed by JP'515, as evidenced by the other cited references, meets the compositional limitations recited in the instant claims. Accordingly, the photoreceptor disclosed by JP'515 appears to be the same or substantially the same as the photoreceptor made by the method recited in the instant claims. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

17. Claims 1, 2, 4, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 2000-075509 (JP'509), as evidenced by the ACS File Registry Number RN 26201-32-1 and JP'050, combined with JP'515. See the USPTO translation of JP'050 and the THOMAS machine-assisted English translations of JP'509 and JP'515 for cites.

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JP' 509 discloses a single-layered photoreceptor comprising an aluminum drum having thereon a photoconductive layer comprising alpha titanylphthalocyanine, a hole transport material, a fluorenylidene malononitrile electron transport compound of formula (5), and a binder resin. See the THOMAS translation of JP' 505, paragraphs 0039-0044, and example 4 in paragraph 0051-0053. The fluorenylidene malononitrile compound of formula (5) meets the electron transport material compositional limitation recited in instant claim 4.

JP' 509 does not disclose that the alpha titanyl phthalocyanine has at least 2 main peaks at Bragg angles in the range of  $9.5^{\circ}$  to  $27.3^{\circ}$  as recited in the instant claims. However, as evidenced by JP' 050 and the ACS File Registry Number RN 26201-32-1, it is well-known in the art that the alpha titanyl phthalocyanine has the chemical structure and the X-ray diffraction pattern as recited in the instant claims. The discussions of JP' 050 and the ACS File Registry Number RN 26201-32-1 set forth in paragraph 16 above are incorporated herein by reference. Thus, it is reasonable to conclude that the JP' 509 alpha titanyl phthalocyanine meets the titanyl phthalocyanine limitations recited in the instant claims. The burden is on applicants to prove otherwise. Fitzgerald, supra.

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JP'509 does not disclose that the binder resin comprises the polyester resin recited in the instant claims. However, JP'509 discloses that the binder resin may be a polyester resin. JP'509 further teaches that the binder resin may be a mixture of two or more different resins. THOMAS translation of JP'509, paragraph 0024, lines 5 and 22-23.

JP'515 teaches that the binder resin in a single-layered photoreceptor may comprise a polyester resin comprising a biphenylfluorene structure associated with the trademark O-PET obtained from Kanebo, Ltd., and a polycarbonate resin. THOMAS translation of JP'515, paragraphs 0012-0014, 0032, and 0034. JP'515 discloses that the polyester associated with the trademark O-PET is a copolymer comprising the units represented by JP'515 formula 11 and ethylene terephthalate. Translation, paragraphs 0034 and 0060-0061. The polyester resin O-PET disclosed by JP'515 meets the polyester resin composition recited in the instant claims. JP'515 teaches that the polyester resin may be present in the weight ratio of 5 to 100 parts by weight to 100 parts by weight of the polycarbonate resin. THOMAS translation of JP'515, paragraph 0035. The weight ratio is within the weight ratio range of 1:99 to 99:1 recited in instant claim 8. According to JP'515, when its binder resin is used as the binder resin in a single-layered

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photoreceptor, the photoreceptor has excellent property in coating-film strength and electrical properties in positive charging, and good repetition characteristics. THOMAS translation of JP'515, paragraphs 0001, 0011, 0076, and 0077.

It would have been obvious for a person having ordinary skill in the art to use the binder resin taught by JP'515 as the binder resin in the single-layered photoreceptor disclosed by JP'509, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic single-layered photoreceptor having the benefits disclosed by JP'515.

Instant claims 1, 2, 4, 5, 7, and 8 are written in product-by-process format. JP'509 does not exemplify forming the photoconductive layer as recited in the instant claims. JP'509 discloses forming a dispersion by dispersing its alpha titanyl-phthalocyanine, the hole transport material, the electron transport material, and a binder resin in chloroform. Translation of JP'509, paragraphs 0039-0043 and example 4. However, as discussed supra, the single-layered photoreceptor rendered obvious over the combined teachings of JP'509, as evidenced by the other cited references, and JP'515 meets the compositional limitations recited in the instant claims. Accordingly, that photoreceptor appears to be the same or

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substantially the same as the photoreceptor made by the method recited in the instant claims. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

18. Claims 1-5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/00228534 A1 (Zhu), as evidenced by applicants' admission in paragraph 0033 of the instant specification of the chemical identity of the material associated with the tradename MPCT 10 obtained from Mitshubishi [sic: Mitsubishi] Paper Mill Co., combined with US 6,528,645 B1 (Hamasaki) and JP'515. See the THOMAS translation of JP'515 for cites. The disclosure relied on in Zhu for the rejection has an effective filing date of May 31, 2002, as evidenced by the provisional application 60/385,233 (Application'233).

Zhu discloses a single-layered photoreceptor comprising a an aluminum coated substrate having thereon a photoconductive layer comprising titanylphthalocyanine, an enamine-stilbene based the hole transport material associated with the trademark MPCT-10 obtained from Mitsubishi Paper Mills, the electron transport compound (4-n-butoxy-9-fluorenylidene)malononitrile, and a polyvinylbutyral binder resin. Zhu, paragraphs 0065-0067 and preparation of examples 1-3 at paragraph 0069; and Application'333, page 12, line 20, to page 13, line 8;

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examples 1-3 at page 13, lines 9-13. The electron transport compound is within the compositional limitation recited in instant claim 4. Zhu does not identify the hole transport material MPCT-10 as an enamine-stilbene polymer as recited in instant claim 3. However, the originally filed specification in paragraph 0033 identifies the tradename MPCT-10 as a "charge transfer material of enaminstylbene [sic] polymer."

Zhu does not disclose that the titanyl phthalocyanine has at least 2 main peaks at Bragg angles in the range of  $9.5^{\circ}$  to  $27.3^{\circ}$  as recited in the instant claims.

Hamasaki discloses titanyl phthalocyanine crystals that exhibit a maximum peak in the powder X-ray diffraction pattern at the Bragg angle  $2\theta \pm 0.2^{\circ}$  of  $27.2^{\circ}$ , and main peaks at Bragg angles  $9.5^{\circ}$  and  $24.1^{\circ}$ . See col. 6, lines 3-39, and, for example, Preparation Example 1 at cols. 20-21, col. 23, lines 16-20, and Figs. 2 and 3. Hamasaki's titanyl phthalocyanine crystals are within the compositional limitations recited in the instant claims. According to Hamasaki, when its titanyl phthalocyanine crystals are used in positively charged single layer photosensitive layers, the layers have good sensitivity characteristics "that are always stable regardless of the lapsed time after preparing the coating solution" comprising said



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titanyl phthalocyanine crystals. Col. 3, lines 64-67, and Table 2, examples 1-12.

It would have been obvious for a person having ordinary skill in the art to use Hamasaki's titanyl phthalocyanine crystals as the titanyl phthalocyanine charge generating material in the photoreceptor disclosed by Zhu, because that person would have had a reasonable expectation of successfully obtaining a positively charged single-layered photoreceptor having good stable sensitivity characteristics.

Zhu also does not disclose that the binder resin may be the polyester resin recited in the instant claims. However, Zhu discloses that the binder resin used in the single-layered photoreceptor may be a polycarbonate resin or a polyester resin. Zhu also discloses that the binder resin may be a combination of resins. Zhu, paragraph 0038, lines 11, 13, and 18-19; and Application'333, page 6, lines 9, 10, and 13-14.

JP'515 teaches that the binder resin in a single-layered photoreceptor may comprise a polycarbonate resin and a polyester resin comprising a biphenylfluorene structure that meets the polyester compositional limitations recited in the instant claims. The discussion of JP'515 in paragraph 17, supra, is incorporated herein by reference.

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It would have been obvious for a person having ordinary skill in the art, in view of the teachings in JP'515, to use the binder resin taught by JP'515 as the binder resin in the single-layered photoreceptor rendered obvious over the combined teachings of Zhu and Hamasaki, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic single-layered photoreceptor having the benefits disclosed by JP'515.

Instant claims 1-5, 7, and 8 are written in product-by-process format. Zhu does not exemplify forming the photoconductive layer as recited in the instant claims. Zhu discloses forming a dispersion by dispersing a titanyl-phthalocyanine and a binder resin in the solvent methyl ethyl ketone, and mixing the dispersion with a solution that comprises the hole transport, the electron transport material, a binder resin, and the solvent tetrahydrofuran. Zhu, paragraphs 0067-0069; and Application'233, page 12, line 20, to page 13, line 13. However, as discussed supra, the single-layered photoreceptor rendered obvious over the teachings of Zhu, as evidenced by applicants' admission, combined with the teachings of Hamasaki and JP'515, meets the compositional limitations recited in the instant claims. Accordingly, that photoreceptor appears to be the same or substantially the same

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as the photoreceptor made by the method recited in the instant claims. The burden is on applicants to prove otherwise.

Marosi, supra; Thorpe, supra; MPEP 2113.

19. Claims 1, 2, 4, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0096761 A1 (Lin), as evidenced by the ACS File Registry Number RN 26201-32-1 and US 5,350,844 (Martin), combined with JP'515. See the THOMAS translation of JP'515 for cites.

Lin discloses a single-layered photoreceptor comprising a aluminum drum having thereon a photoconductive layer comprising Type IV titanylphthalocyanine, a hole transport material, an electron transport compound, and a polycarbonate binder resin. Example 1 at paragraphs 0062-0063.

Lin does not exemplify the use of an electron transport compound as recited in instant claim 4. However, Lin teaches that the electron transport compound may equally be (4-n-butoxycarbonyl-9-fluorenylidene) malononitrile, which meets the electron transport material compositional limitation recited in instant claim 4. Paragraph 0049.

Lin does not disclose that the Type IV titanyl phthalocyanine has at least 2 main peaks at Bragg angles in the range of 9.5° to 27.3°. However, as evidenced by the ACS File

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Registry Number RN 26201-32-1, it is well-known in the art that titanyl phthalocyanine has the chemical structure recited in the instant claims. Martin discloses that the Type IV titanyl phthalocyanine provides an X-ray diffraction pattern having at least two peaks at the Bragg angles  $2\theta \pm 0.2^\circ$  in the range of  $9.5$  to  $27.3^\circ$ . See Martin, Fig. 3 and example II at cols. 18-19. Thus, it is reasonable to conclude that the Lin Type IV titanyl phthalocyanine meets the titanyl phthalocyanine limitations recited in the instant claims. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Lin does not disclose that the binder resin comprises the polyester resin recited in the instant claims. However, Lin discloses that the binder resin may equally be a polyester resin. Lin, paragraph 0060, line 6.

JP'515 teaches that the binder resin in a single-layered photoreceptor may comprise a polycarbonate resin and a polyester resin comprising a biphenylfluorene structure that meets the polyester compositional limitations recited in the instant claims. The discussion of JP'515 in paragraph 17, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Lin and JP'515, to use (4-n-butoxycarbonyl-9-fluorenylidene) malononitrile as the

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electron transfer material and the binder resin taught by JP'515 as the binder resin in the single-layered photoreceptor disclosed by Lin, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic single-layered photoreceptor having the benefits disclosed by JP'515.

Instant claims 1, 2, 4, 5, 7, and 8 are written in product-by-process format. Lin does not exemplify forming the photoconductive layer as recited in the instant claims. Lin discloses forming a dispersion by roll milling its TYPE IV titanyl-phthalocyanine and a polycarbonate binder resin in the solvent toluene and then mixing the dispersion with a solution that comprises the hole transport material, the electron transport material, a binder resin, and the solvents tetrahydrofuran and monochlorobenzene. Lin, example 1. However, as discussed supra, the single-layered photoreceptor rendered obvious over the teachings of Lin, as evidence by the other cited prior art, combined with the teachings of JP'515, meets the compositional limitations recited in the instant claims. Accordingly, that photoreceptor appears to be the same or substantially the same as the photoreceptor made by the method recited in the instant claims. The burden is on

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applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

20. Applicants' arguments filed on Apr. 28, 2005, with respect to the rejections over the prior art in paragraphs 15-19 above have been fully considered but they are not persuasive.

Applicants assert that Yokota and Lin are not prior art because they have perfected their claim to foreign priority by filing the English-language translation of the priority document, Korea 2002-40105, on Apr. 28, 2005, which is accompanied with a certification statement in compliance with 37 CFR 1.55(a)(4). Applicants also assert that Lin does not qualify as prior art under 35 U.S.C. 102(a) or under 35 U.S.C. 102(b).

However, applicants have not perfected their claim to foreign priority for the subject matter recited in the instant claims. The applicants' certification statement under 37 CFR 1.55(a)(4) is not present in the instant application. 37 C.F.R. 1.55(a)(4) states that "[i]f an English language translation is required, it must be filed together with a statement that the translation of the certified copy [of the non-English priority document, the foreign application] is accurate" (emphasis added). See MPEP 201.15 (8<sup>th</sup> edition, Rev. 2, May 2004).

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Furthermore, Lin has an effective filing date of Nov. 20, 2002, which is prior to the filing date of Jun. 24, 2003, of the instant application. In addition, the inventive entity in Lin is not the same as that in the instant specification. Thus, Lin qualifies as prior art under 35 U.S.C. 102(e).

Accordingly, for the reasons discussed above, Yokota and Lin are both prior art with respect to the subject matter recited in the instant claims.

Moreover, even if the English-language translation filed on Apr. 28, 2005, were an "accurate" translation of the certified copy of the priority document, the translation would not provide antecedent within the meaning of 35 U.S.C. 112, first paragraph, for the subject matter recited in the instant claims. The following examples are not exhaustive. The translation does not broadly recite the use of "dispersion materials" recited in instant claims 1, 5, 9, 13, and 15. See the translation at page 14, lines 6-7, which discloses using six specific materials. The recitation "dispersion materials" recited in the instant claims is broader than the disclosed six specific materials because it includes dispersion materials that are not disclosed in the translation. The translation does not disclose the "electrically conductive substrate of a drum" or the "electrically conductive substrate of a cartridge" broadly

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recited in instant claims 1, 5, 9, 13, and 15. See the translation at page 15, line 2, which discloses an aluminum drum. The term "electrically conductive substrate of a drum" recited in the instant claims is broader than the aluminum drum disclosed in the translation because it includes conductive drums that are not aluminum.

Applicants further assert that none of the references, in particular Yokota, JP'515, JP'509, Zhu, and Lin, teaches or suggests making their photoconductor with the solvent 1,1,2-trichloro-ethane. Applicants conclude that the prior art neither anticipates nor renders obvious the photoreceptor recited in instant claims 1-8.

However, as discussed in the rejections in paragraphs 15-19 above, instant claims 1-8 are written in product-by-process format. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from the product of the prior art, the claim is unpatentable even though the prior product was made by a different method." MPEP 2113, citing Thorpe, supra. As discussed in paragraphs 15-19 above, the photoreceptors disclosed by the prior art or rendered



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obvious over the combined teachings of the cited references meet the photoreceptor compositional limitations recited in the instant claims. Thus, those photoreceptors appear to be the same as or substantially the same as the photoreceptor made by the method recited in the instant claims. Applicants have not met their burden to show otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

21. Claims 1 and 2 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-7, 9-12, 15, and 16 of copending Application No. 10/459,720 (Application'720) in view of Hamasaki.

This is a provisional obviousness-type double patenting rejection.

Reference claim 3, which depends from reference claim 1, recites a single-layered photoreceptor comprising an electrically conductive substrate having thereon a layer comprising a particular polyester binder resin, a hole transfer material, and a charge generating material. Reference claim 5, which depends on reference claim 1, recites that the particular polyester resin may be represented by the chemical formula recited in the instant claims. Reference claim 4, which depends

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from reference claim 1, further requires that the layer further comprise an electron transport material. Reference claim 16, which depends from reference claim 15, recites an electrophotographic drum comprising a photoreceptor disposed on the drum comprising an electrically conductive substrate having thereon a layer comprising the particular polyester binder resin, as recited in reference claim 3, and a hole transfer material.

The reference claims do not recite that the charge generating material is a titanyloxy phthalocyanine as recited in the instant claims.

Hamasaki discloses titanyl phthalocyanine crystals that exhibit at least two main peaks at Bragg angle  $2\theta \pm 0.2^\circ$  in the range of  $9.5^\circ$  and  $24.1^\circ$  as recited in the instant claims. The discussion of Hamasaki in paragraph 18 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in Application'720 and the teachings of Hamasaki, to make and use a single-layered photoreceptor comprising Hamasaki's titanyl phthalocyanine crystals as the charge generating material, such that the resultant photoreceptor meets the limitations recited in the instant claims, because that person would have had a

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reasonable expectation of successfully obtaining a positively charged single-layered photoreceptor having good stable sensitivity characteristics.

Instant claims 1 and 2 are written in product-by-process format. The claims in Application'720 do not recite forming the photoconductive layer by the method recited in the instant claims. However, as discussed supra, the single-layered photoreceptor rendered obvious over the subject matter recited in the claims of Application'720 combined with the teachings of Hamasaki meets the compositional limitations recited in the instant claims. Accordingly, that photoreceptor appears to be the same or substantially the same as the photoreceptor made by the method recited in the instant claims. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

Applicants' arguments filed on Apr. 28, 2005, have been fully considered but they are not persuasive.

Applicants assert that the claims of Application'720 do not recite making the photoreceptor with the solvent 1,1,2-trichloroethane as recited in the instant claims. Applicants also assert that the rejection is premature because Application'720 has not issued as a patent and the claims in Application'720 may change.

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However, as discussed in the rejection above, instant claims 1 and 2 are written in product-by-process format. The discussion of product-by-process claims in paragraph 20 above is incorporated herein by reference. As discussed in the rejection above, the photoreceptor rendered obvious over the subject matter recited in the instant claims of Application'720 combined with the teachings of Hamasaki meets the photoreceptor compositional limitations recited in the instant claims. Thus, that photoreceptor appears to be the same as or substantially the same as the photoreceptor made by the method recited in the instant claims. Applicants have not met their burden to show otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

Furthermore, the rejection is not premature. The subject matter recited in the claims of Application'720 as of Sep. 6, 2005, combined with the teachings of Hamasaki, still renders obvious the photoreceptor recited in instant claims 1 and 2. Accordingly, the rejection stands.

22. Claims 9, 11, 12, 15, and 23 are allowable over the prior art of record.

Claim 24 would be allowable if rewritten to overcome the objections set forth in paragraph 11 above.

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The prior art of record does not teach or suggest the method of making a photoreceptor as recited in instant claim 9, which requires the use of 1,1,2-trichloroethane for the reasons discussed in paragraph 4 above, which are incorporated herein by reference. Nor does the prior art of record teach or suggest a method using the milling temperature of "below 15°C" recited in instant claim 15.

Neither Zhu nor Lin teaches or suggests milling the dispersion liquid at the temperature recited in instant claim 15.

23. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (571) 273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Janis L. Dote*  
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Sep. 6, 2005